XV.—Notes on some Rhodesian Moths of the family Saturniidæ and their Larvæ,

by

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With Plate XXIV.

IN no part of South Africa is the Family Saturniidæ more richly represented than in Southern Rhodesia. In the immediate neighbourhood of Salisbury alone, no fewer than twenty-eight different species have been found or bred from their larvæ, and I know of eleven others that have been captured in the Bulawayo, Gwelo, Hartley and Melsetter districts. Several of those that I have taken or bred at Salisbury are considered great rarities outside the territory, and the following notes on them and their larvæ may prove of interest to collectors.

I have included in the notes a crude and merely provisional description of three species that are probably new, and have pointed out in what respects the male (hitherto unknown) of the beautiful *Nudaurelia carnegiei*, described by Janse in these Annals last year,* differs from the female.

With the exception of *Lobobunæa* sp. nov. ?, *Nudaurelia carnegiei* and *N. arabella* sub-sp. *jacksoni*, all the Salisbury Saturniidæ are represented in the collection of the Durban Museum.

IMBRASIA EPIMETHEA, Drury, sub-sp. ERTLI, Rebel.

This is an abundant moth round Salisbury and on the Chilimanzi Reserve between Umvuma and Victoria; and I have seen numbers of the larvæ on their food-plant at Umtali. These caterpillars, which are gregarious, are known to the Mashonas as "madora," and are highly esteemed by them as an article of diet. They are found on two leguminous trees, *Brachystegia randii* and *Brachystegia* sp., as many as two to three hundred being sometimes seen on a single tree. They are much parasitised by ichneumon flies and a great many fall victims to ants and other enemies when they leave the tree to go to earth.

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* *Supra* p. 78.

The moth is also common about Victoria (Fort Victoria, not Victoria Falls) and the Makaranga of the Victoria district call the caterpillar "arati." They eat it with as much avidity as the Mashonas about Salisbury do.

Unlike all other large moths of the family Saturniidæ, this species rests with both wings erect and folded together.

The caterpillar in the last two instars is black, very soft, and rather thickly covered with long white downy hairs. It usually pupates in March or April, and the moth as a rule emerges in November. I have known one or two instances in which the imago did not leave the pupa-case until the middle of February.

The male of this Saturniid varies much in both size and colour. Small examples have a wing expanse of only 95 mm. or thereabouts, while large specimens expand as much as 135 mm. The ground-colour of both wings may be light greyish-buff, grey with a pink flush, tawny, or ochreous-red. The light markings of the fore-wing are white in the buff and grey specimens, light pink in the reddish examples.

The female is much less variable in colour, the ground-colour of the fore-wing and very broad hind-marginal band of the hind-wing being nearly always chocolate-brown or reddish-chocolate. The white bands of both wings and white sub-apical patch of the fore-wing are much larger and better defined than in the male: the wing expanse ranges from 130 mm. to 145 mm.

BUNÆA ALCINOE, Stoll.

This widespread moth is extremely abundant in the Salisbury district, its conspicuous larvæ often completely denuding a tree (*Cussonia spicata*) with very large leaves. In this district both males and females are markedly variable in colour, some of the former being beautifully tinted with pink or lilac. The Mashonas call the caterpillars "mashondjgwa" and devour them in great numbers. These caterpillars feed rapidly and are easy to rear, and bred specimens of the moth are usually as large as those that have fed in the open, expanding from 160 mm. to 175 mm. across the wings. A dwarf male, the pupa of which I kept in a hot, dry place, has a wing expanse of only 104 mm. and is of exceedingly light colour.

BUNÆA HEROUM, Oberth.

This very large and beautiful Bunæa is by no means uncommon around Salisbury, and I have heard of its occurrence at Victoria.

Both sexes, the male especially, show great variability in the amount of white scaling on the wings.

As the moth is little known in South Africa, a short description of the wing upper-side may be useful.

Fore-wing. A broad basal bright ochreous-yellow patch, bounded on the costa and outwardly by a narrow black band, occupying the basal two-fifths of the cell, projecting triangularly into area 1c, and narrowest in 1b and 1a. Apex and hind-margin with a dull ochreous-yellow band from 6 to 8 mm. wide, narrowest between nervules 6 and 4, and broadening towards the hind-angle where it is sometimes as much as 10 mm. wide. Beyond the basal ochreous patch the wing is densely covered with white scales, the white extending on the costa as far as the hind-marginal band, reaching the inner edge and middle of the lower margin of the large ocellus, then narrowing slightly to the inner margin. In the post-median and sub-apical areas the scales are dark reddish-purple or magenta. In many examples the outer part of the wing is thinly dotted with white scales, and in two males the pure white area reaches from the basal patch to the hind-marginal band. Ocellus broadly oval; hyaline patch outwardly rounded, inwardly rectangular. Outer ring of ocellus white or (rarely) light pink and very narrow, then a much broader dark crimson ring, and within this a narrow black ring bounding the hyaline patch. Across the wing, and interrupted by the ocellus, there is a sinuous dark reddish-purple transverse band, inwardly angulated between nervules 2 and 1b.

Hind-wing. Dark or lighter mouse-grey, with a broad ochreous hind-marginal band similar to that of the fore-wing and bounded inwardly by a narrow and well defined or broader and diffused band of the ground-colour, on the inner edge of which is a white band, usually narrow, but sometimes moderately broad, and in one male example reaching as far as the ocellus. An irregular, somewhat diffused, narrow or moderately broad ante-median white band, bent inwardly at nervule 2 and wider thence to inner margin. Ocellus large, usually round but occasionally slightly oval, consisting of an outer narrow white (rarely pink) ring, and an inner, much broader ring of bright crimson within which is a large round black patch, sometimes slightly hyaline about its centre, owing to reduction of scales.

In the fore-wing of the male the costa is more rounded towards the apex and the outer margin much more deeply concave between nervules 6 and 3 than in that of the female.

Wing expanse: ♂ 168–200 mm.; ♀ 150–206 mm.

The average wing expanse is from 185 to 190 mm. Bred specimens are usually smaller, but last summer I bred a male and female that expanded, respectively, 200 and 206 mm. across the wings.

Egg. Large, round and pure white in colour. These eggs are laid on the leaves of the food-plant, *Brachystegia randii*, the native name of which is "musasa," in batches of from three to eight. Owing to their white colour and large size they are very conspicuous, and they are much parasitised by a fairly large Chalcid. They generally hatch out between the middle and end of January.

Larva. First instar. Black, with rows of black tubercles closely set with long black upright setæ.

Second instar. Immediately after the first moult the caterpillar has much the same appearance as before, but the wart-like tubercles are larger and more conspicuous. As it fills out both colour and pattern undergo a considerable change. The body and tubercles become brick-red, and on each segment there is a moderately broad black transverse band dotted with minute cream-coloured spots, while the head and tubercles bear long white setæ.

Third instar. Body mottled with black and yellow, or greenish-yellow spots. Each segment with eight red setigerous tubercles. Head dark chocolate-brown.

Fourth instar. Each of the segments light green in the middle, pale mauve or lilac anteriorly and posteriorly, and armed with six long upright lilac-red spines, strongly set with whitish bristles, the dorsal spines simple, the lateral ones barbed near the tip. Legs, abdominal feet and claspers strongly setigerous. Head, shield and claspers brownish-lilac.

Fifth instar. Similar to last, but the spines are of a deeper red colour. Stigmata dark red.

In the two final instars the caterpillar is a very handsome object, and, owing to its stout setæ, decidedly unpleasant to handle. Probably for this reason it is not eaten by the natives. It usually pupates in March or April, and the moth emerges in November and December.

During the daytime the moth remains motionless, with partly expanded wings, on the leaves of its food-plant, the rather dull under-side alone showing. Hence, despite its great size, it is quite inconspicuous and can only be found by careful searching.

BUNÆA ANGASANA, Westw.

This fine moth has been bred at Salisbury in some numbers from larvæ found feeding on *Uapaca kirkiana*, a tree that grows on stony hillsides all over Mashonaland and is known to the natives as the "mahobahoba." The males vary much in colour, some being light pearly-grey, while others are very much darker, with a fuscous, slightly ante-median, transverse band in the fore-wing, reaching from the costa to near the inner-margin. Specimens that have emerged in my boxes vary in wing expanse from 156 mm. to 170 mm.

BUNÆA sp. nov. ?

Of this large and very beautiful *Bunæa* nearly a dozen specimens have been bred by my friend, Mr. A. W. Redfern, to whom I am indebted for three fine examples. Mr. Redfern, informs me that he looked in vain for the moth in the collection of the British Museum, so it is probably an undescribed species. I have seen three examples in the Bulawayo Museum, two of which were captured at Que Que, twenty miles north of Gwelo, some years ago; the third has no locality label.

The adult larva is very like that of *Lobobunæa macrothyris*, but differs from it in several points. The colour is yellowish-green; the dark green minute spots are much more sparse on the dorsal surface, but dense below the lateral band. Cephalic plate yellowish-brown; dorsal, strongly impressed band light grey; stigmata salmon-coloured. Abdominal feet without setæ inferiorly, except for a very narrow brush in the middle. Anal plate triangularly bright yellow; lateral inferior band flavous; head light green.

A brief description may help collectors to recognise the moth, should they be fortunate enough to come across it.

♂. Head, under-side of prothorax, antennæ and legs mouse-brown. Meso- and meta-thorax white beneath; pronotum mouse-grey with anterior margin white. Abdomen light mouse-grey above, whitish beneath.

Fore-wing. Costa nearly straight to beyond ocellus, then sharply curved. Apex very acuminate; outer-margin deeply concave between nervules 7 and 4, thence slightly sinuous to hind angle. Colour of wing light mouse-brown, darker in median and post-median areas between nervules 6 and 2. A somewhat diffuse broad ante-median white patch between costa and median nervure, and a similar post-median patch reaching from costa to nervule 7 or 5. Hind margin with a white or light pink border, narrowest at apex, widening gradually to nervule 2 where it is from 10 to 14 mm. broad, below that inwardly diffused with brown, and bounded on its inner edge by a narrow dark-brown band. Ocellus large, oval. Outer ring narrow, pink ; inner ring broad, bright red, enclosing a black round mark in the centre of which is a minute hyaline spot.

Under-side. Much lighter ; hind-marginal border narrower between nervule 4 and hind angle, inwardly edged by a broad and rather indistinct dark-brown band.

Hind-wing. Slightly angled at nervule 2. Light mouse-grey with a large dark-brown sub-triangular patch enclosing the ocellus ; costa and hind-margin greyish-white. Ocellus very large, oval or nearly round. Central part black with a very small hyaline space in the middle ; then a broad bright-red ring ; next to this a moderately broad deep-pink ring ; outer ring narrow, crimson.

Under-side. Basal and median areas pink or pinkish-white. Hind-margin broadly greyish or pinkish-lilac, inwardly suffused between the nervules with dark lilac-grey. Inner-margin light ochreous-brown from base to near anal angle. A very large, almost retort-shaped, dark yellow-brown mark enclosed by a narrow dark-red band, occupying the whole of the cell except the upper basal half, the base of areas 2, 3, 4 and 5, and invading area 6 near its base. A small quadrate dark brown mark at base of area 7, and a narrow dark brown band, outwardly edged with yellowish-brown scales and extending across the wing from the apex to the inner-margin.

♀. Similar to ♂, but apex of the fore-wing even more acuminate, hind-margin much less deeply concave between nervules 7 and 4, and antennæ only slightly pectinated.

Wing expanse. ♂ 167–186 mm. ; ♀ 156–178 mm.

LOBOBUNÆA NATALENSIS, Aur. (= PATRUELIS, Dist.).

This Saturniid is very variable in colour. The fore-wing may be light olive-ochreous, light mouse-grey, sometimes with a greenish tinge sometimes flushed with orange-red, greyish-ochreous, orange ochreous, deep or bright orange-red. When the fore-wing is greyish or ochreous the hind-wing is of the same colour, with a large discal orange patch between the costa and post-median band which runs almost parallel to the hind-margin. Examples with orange-red fore-wing have the hind-wing entirely red, turning to light olive-buff or, rarely, pale mauve near the outer-margin. Both wings have a narrow, or very narrow, olive-brown or reddish-brown hind-marginal border.

In typical examples the fore-wing has a sub-basal, median and post-median wavy transverse band; but in many specimens, one, two or all of these bands are very faint, and the two inner ones are sometimes obsolete. Very rarely all three are wanting.

Wing expanse. ♂ 125–166 mm.; ♀ 150–175 mm. Common at Salisbury.

L. natalensis is very closely allied to *L. macrothyris*, Roths. & Jord., and a good many people have been very sceptical about the specific difference of the two. Having bred a large number of both moths from the egg, I am in a position to state that there is not the slightest doubt that the two are quite distinct, and can demonstrate this by setting down in parallel columns the points of difference that may be noted all through from the ovum to the imago. The larvæ of both species feed on *Brachystegia randii*.

L. natalensis.	*L. macrothyris.*
Egg. Light green with a few reddish spots.	Light ochreous-yellow, speckled with brick-red spots.
Larva.	
1st instar. Head and body black.	Head and body dark brick-red.
2nd instar. Head black. Thorax and abdomen grass-green. Thoracic segments mottled with dark green spots; abdominal segments with no dorsal, and only a few lateral dark green spots.	Head light green. Thorax and abdomen emerald green, mottled all over with dark green round spots.
3rd instar. The dark green spots much more numerous than in previous instar, covering both dorsal and lateral surfaces. Stigmata very light red-brown. On second abdominal segment there is a silvery-white, oblique carina, interrupted near its lower extremity. Abdominal feet with only a few setæ inferiorly.	Dark green spots cover only the dorsal and part of the lateral surface, stopping short at some distance from the stigmata, which are dark crimson. No silvery-white carina on second abdominal segment, but, instead, a silvery-white post-cephalic plate or ridge. Abdominal feet closely set with setæ inferiorly.

4th instar. Similar to preceding instar, but tubercles comparatively smaller and not armed with terminal setæ.	Similar to third instar, but no lateral dark-green spots.
5th instar. Oblique silvery-white carina on second abdominal segment very large. Entire body closely covered by dark green round spots. Stigmata green. Inferior lateral whitish band raised. Abdominal feet with only a very few setæ. Segments distinctly angulated superiorly.	No oblique carina on second abdominal segment. Dorsal area only with dark green spots ; hence the caterpillar looks much lighter than that of *natalensis*. Stigmata very dark red purple. Whitish inferior lateral band not raised. Abdominal feet rather closely set with setæ inferiorly. Segments all evenly rounded, not angulated superiorly.
Pellets of frass of the caterpillar in its final instar of normal size.	Caterpillar in final instar drops pellets of frass of enormous size, which at once indicate that the larva of *macrothyris* is feeding on the tree.
Caterpillar easy to rear in first two instars. Is found at Salisbury from early in November to middle of January.	Caterpillar delicate and very difficult to rear in first two instars. Is found at Salisbury from about the middle of January to the middle of March.
Imago.	
Upper-side. Fore-wing light olive-ochreous, light mouse-grey, orange-ochreous to bright orange-red, much paler near the outer-margin. Transverse sinuous bands distinct or faint, very rarely altogether wanting ; the post-median band distinctly angled at nervule 7.	Fore-wing much darker mouse-grey or mouse-brown, often with a greenish, more rarely, reddish or lilac flush ; mauve or lilac near outer-margin. Very rarely the entire wing is deep orange-red, bright lilac near the outer-margin. No trace of any transverse sinuous band in nearly all examples. Very rarely a faint post-median band, hardly sinuous and not angled at nervule 7.

Hind-wing. Red discal patch large or very large, its inner edge some distance from the black ocellus. Sub-marginal area pale olive-green or olive-buff; rarely pale red-lilac or mauve.	Hind-wing. Red discal patch rather smaller than in *natalensis*, its inner edge very close to the black ocellus. Sub-marginal area mauve-lilac or lilac-grey.
Under-side. Ground colour of both wings pale olive-green or olive-ochreous, sometimes with an orange or pinkish flush.	Ground colour of both wings nearly always light to very light grey; very rarely (in females only) light olive-buff.
Size. 125–175 mm.	Rather larger. Well-grown males expand 165–170 mm.; females 175–180 mm.
Moth emerges (at Salisbury) from end of September to end of October.	Moth emerges (at Salisbury) from early in November to about middle of December.

Bred specimens of *macrothyris* are often undersized, as the larva, especially in its early instars, feeds badly in captivity. A dwarf male in my collection, that emerged on 29th November, 1917, has a wing expanse of only 98 mm.

The full-grown larva of *macrothyris* is thicker and more stumpy than that of *natalensis*, and its colour is wonderfully procryptic, identical with that of the leaves on which it feeds. Hence, though certain of its presence from the monstrous pellets of frass, one may hunt for it for a long time in vain. For three years I frequently saw the frass under the *B. randii* trees but could never detect a caterpillar, and I was under the impression (shared by Mr. R. W. Jack) that it must be a nocturnal feeder that hid itself during the daytime. It, as well as the larva of *natalensis*, is (when found) eaten by the natives, to some of whom it is known as "chinyinanegore." But the fact that most natives, despite their keen sight, are unacquainted with the caterpillar, and also that it is seldom parasitised by ichneumon flies, is eloquent testimony to the protection afforded it by its procryptic colour.

Distant's *Bunœa patruelis* is supposed to be identical with *L. natalensis*, Aur., but neither his description nor coloured figure (v. "Insecta Transvaaliensia," pl. vii, fig. 14) agree with any of the numerous examples of *natalensis* that I have seen. On the other hand, his fig. 13 on the same plate, which is supposed to be an illustration of *epithyrena*, var., is in everything except the colour of the marginal light band of both wings, an exact representation of the red variety of *natalensis* found at Salisbury.

LOBOBUNÆA sp. nov.?

Of this species, which differs in many respects from *natalensis* and *macrothyris*, I have bred one male and captured a second at Salisbury. The two specimens differ much in colour, and as the moth is probably a new species I shall give a short description of each.

Example 1.

Head, legs and under-side of thorax dark mouse-grey; pronotum orange-ochreous with the anterior margin light grey. Abdomen dull orange-ochreous above, lilac grey on under-side.

Fore-wing. Costa, basal two-thirds straight, thence strongly curved to apex which is rather acuminate. Hind-margin moderately concave between nervules 7 and 4, hind angle rounded. Orange-ochreous, turning to bright lilac near the outer-margin; base with a lilac tinge. A post-median violaceous sinuous band angled at nervule 7, and a very small subquadrate hyaline spot on the discocellulars.

Hind-wing dull orange. Base, to about middle of cell, densely covered with long lilac-pink hairs; inner-margin with similar hairs of mouse-brown colour. Hind-margin with a linear olive-brown band and a rather broad bright lilac inner-band. Separated from this by a band of the ground-colour is a narrow slate-grey fascia, parallel to the hind-margin as far as nervule 5, then bent upwards towards the costa. Ocellus round, rather large, consisting of a greyish-black round spot in the centre of which is a very small hyaline space, and an outer broad black ring.

Under-side. Fore-wing dull pinkish-lilac, with the basal three-fourths of areas 2, 1c, 1b, and 1a, pale salmon-pink; a sub-apical ill-defined fuscous patch between costa and nervule 7, and a black sub-quadrate mark enclosing the hyaline spot.

Hind-wing entirely lilac-pink, with a faint indication of the post-median slate-grey band.

Wing expanse 126 mm.

Example 2.

Differs from the preceding in the following respects: pronotum and abdomen bright brick-red; fore-wing bright brick-red, turning to light grey near the hind-margin. Post-median transverse band greyish-lilac. Hind-wing deep orange-red, with the post-median and broad juxta-marginal band light slate-grey.

Under-side. Both wings light grey with a pinkish flush. Inner-margin of fore-wing bright pink. A well-defined median sinuous dark brown fascia in both wings, not visible on upper-side.

Wing expanse 134 mm.

The adult larva is very like that of *macrothyris*, but smaller and of yellow-green colour. The small dark green spots cover the entire body except on the ventral surface; the stigmata are crimson and the segments distinctly angulated, like those of *natalensis*. Food-plant, *Brachystegia*, sp.

The caterpillar went to earth on 24th February, 1917, but the moth (Ex. 1) did not emerge till 3rd March in the following year.

NUDAURELIA CARNEGIEI, Janse.

In describing this very large and brightly coloured *Nudaurelia* last year, Mr. Janse stated that, as far as he was aware, it had been found in S. Rhodesia only at Umvuma and Selukwe. He had quite forgotten a female, bred by me at Salisbury, that he had seen in my collection a few months before. A fine example of the male (hitherto unknown) emerged in one of my breeding boxes on 18th February last year. In colour and markings it is almost identical with the female; but the shape of the fore-wing is quite different, the costa being more strongly arched, the apex much more rounded and the hind-margin rather deeply concave between nervules 7 and 3. The hind-wing is considerably broader than that of the female, with the outer-margin less rounded and more strongly lobed at 1b.

Wing expanse 165 mm

Larva. Final instar. Black, with inter-segmental dark brick-red rings. In the middle of each segment there is a narrow and deep transverse groove, interrupted in the centre on the last five abdominal segments. Segments closely mottled with minute white spots, except in the middle of the dorsal area, where they are very sparse or wanting. Each segment bears six small black setigerous tubercles, the setæ long and white. Stigmata salmon-coloured; ventral surface black. My caterpillars were found on the "munondo" tree (*Brachystegia sp.*) on 13th May, 1917, and went to earth the following day. The female moth emerged on 14th December, and the male two months later. The moth is evidently a rare one in this district, for the caterpillar was quite unknown to several natives to whom I showed it.

NUDAURELIA OUBIE, Guér.

This very pretty moth is fairly common about Salisbury, but most of the specimens captured here are injured or faded. The larva feeds on various grasses, but in its final instar is very difficult to rear in captivity, hence fresh specimens of the moth are scarce. Out of over thirty caterpillars that I have attempted to rear I have succeeded in getting only five moths. These caterpillars are eaten by the natives, who style them "masininiruskwa."

Some examples of the moth have all the black areas of the fore-wing irrorated with bright yellow; in others these areas are intensely black without any yellow scales. The inner-margin of the hind-wing is dark mouse-grey, and its sub-terminal area black in some specimens; in others both these areas are bright yellow.

Wing expanse. ♂ 115–120 mm.; ♀ 110–130 mm.

Egg. Spherical; greyish-brown; usually laid about end of December.

Larva. First instar. Totally black; densely setigerous.

Second instar. Ochreous-yellow, each segment bearing six black setigerous tubercles. Head and post-cephalic plate black.

Third instar. Light bluish-green; each segment with eight black setigerous tubercles, at the base of which is a bright yellow spot. Post-cephalic plate bright yellow.

Fourth instar. Grass-green. Segments bright yellow in the middle and bearing eight dark purplish-red spines.

Fifth instar. Similar to fourth, but bright orange-yellow at base of spines. Head and post-cephalic plate black. Stigmata dark purplish-black. Inferior spines strongly barbed at tip, others simple. Legs, abdominal feet and lower half of claspers black.

The caterpillar usually pupates in March, and the moth emerges between the middle of November and middle of December.

NUDAURELIA ARABELLA, sub-sp. JACKSONI, Jord.

This handsome moth is rarer than the last at Salisbury, but examples are occasionally taken at light. It differs from the typical *arabella* in having the entire basal and median areas of both wings deep carmine or crimson lake instead of yellow, and the ante-median black band of the fore-wing is entirely wanting. The size is smaller than that of *arabella.*

A gregarious caterpillar, that feeds on a rush-like grass in very swampy spots, is probably the larva of *N. jacksoni*; but all attempts made by Mr. Redfern and myself to rear it have hitherto been unsuccessful, as the caterpillar absolutely refuses to feed when removed from its natural habitat. The segments are bright yellow in the middle, black anteriorly and posteriorly, and are armed with six short black spines. The whole of the ventral surface and the abdominal feet are deep carmine.

ATHLETES SEMIALBA, Sonth.

On first receiving from me a pair of this magnificent Saturniid, Janse wrote that he believed it would be the finest moth in his collection for years to come. *A. semialba* is unquestionably a remarkably striking moth, and hardly anything more beautiful could be imagined than a freshly emerged specimen settled with partly expanded wings on the foliage of its usual food-plant, *Brachystegia randii*. The moth is not very uncommon about Salisbury in late November and December, though, curiously enough, very few people have ever seen it. It sometimes remains during the daytime on the trunk of a tree and in this case it is sure to escape notice, the fore-wings looking very much like a piece of bark crowned with white lichen, and they hang down slightly so as to cover the large ocelli of the hind-wings which would at once draw attention to the insect.

The eggs are laid in December on the upper-side of the leaves, in batches of from two to eight, usually at a height of only three to six feet from the ground. They hatch out in about three weeks, and the caterpillars are to be found from January to late in March. In normal seasons the moth emerges between the middle of November and early in December; but when the rainy season starts late their emergence is retarded till the middle of the latter month.

Some description of the moth and its larva may be useful to collectors.

Male. Head, thorax and abdomen as in *Gynanisa maia*, but the pronotum is black, the tegulæ either black or, more often, chocolate-red; abdomen covered with white or tawny hairs; branches of antennæ much shorter than in *G. maia*.

Fore-wing. Costa straight for two-thirds of its length, then strongly arched to apex, which is rather acuminate. Hind-margin very sinuous, deeply concave between nervules 7 and 3; posterior angle rounded. Whole of costa, and base as far as dark median transverse band, densely covered with white scales. Outer half of wing pale or darker ochreous varied by bands and spots of reddish- or chocolate-brown. Hind-margin with an outer wavy black band leaving internervular marginal flavous streaks, and an inner band of blackish- or chocolate-brown. Three transverse dark bands across the wing, the first sub-basal and crossing the white area, zigzag and sometimes broadly interrupted on its upper half; the second median, very broad at the costa and strongly sinuate; the third, post-median, linear, only slightly sinuate and elbowed at nervule 2. Just beyond discocellulars a rather small sub-triangular hyaline space, edged on its inner- and lower-margin with black.

Hind-wing. Outer-margin sinuous, very strongly lobed between nervules 5 and 3, giving the wing a broad spatulate "tail." Entire discal area claret-coloured or magenta, bounded outwardly by a narrow or moderately broad dark pink or pinkish-white band, and an outer band of black or purple-brown, between which and the broad black hind-maginal border the wing is tawny, mottled with blackish or brown scales. Ocellus exactly like that of *G. maia*, except that its black ring is narrowly linear.

Under-side. Fore-wing. Costa and base as far as median band white. Pink, with a few whitish scales, between median and post-median band. Hind-marginal area dark chocolate-brown, lighter on outer edge of post-median band and near apex. Inner-margin dark pink as far as nervule 2.

Hind-wing. Costa, and base to median band, white. Brownish-pink between the transverse bands; dark umber-brown from outer band to hind-margin.

♀. Similar to ♂, but shape of wings different.

Fore-wing. Costa only moderately arched towards apex; hind-margin but slightly concave between nervules 7 and 3.

Hind-wing slightly lobed between nervules 5 and 4.

Wing expanse. ♂ 140–198 mm.; ♀ 150–185 mm.

The average wing expanse of examples found in the open is about 180 mm. Bred specimens are usually undersized as the caterpillar is a slow feeder and will not eat unless its food-plant is perfectly fresh.

Egg. Broadly oval; whitey-brown with dark-brown longitudinal stripes.

Larva. First instar. Totally black, covered with long black bristles; each segment with six setigerous blunt tubercles.

Second instar. Light ochreous or creamy-yellow; head brick-red. In the middle of each segment a transverse shining blue-black band, bearing six erect strongly setigerous tubercles of the same colour. Segments smooth.

Third instar. Similar to preceding after the moult; but as the caterpillar grows the ground-colour becomes nearly white with a light bluish tinge, and the tubercles grow longer and more slender.

Fourth instar. Light blue above, light bluish-green on lateral surfaces, each segment armed with six upright burnished gold spines, the two dorsal much longer and more slender than the four lateral ones. Head, post-cephalic plate and two large triangular patches on the claspers chocolate-brown. Several small golden-yellow granules on each side of the post-cephalic plate. Stigmata black.

Fifth instar. Similar to preceding, but the golden spines are longer and curved backwards and the stigmata are dark red. Just before going to earth the whole body becomes pale milky blue.

The caterpillar feeds on our two local species of *Brachystegia* and also on *Cassia*, sp.

CYRTOGONE BILINEATA, Roths. & Jord.

This is a dark-coloured, but handsome, moth, the female of which looks very much like a Lasiocampid. It is common at Salisbury, where the gregarious caterpillars may be seen feeding in numbers on *Brachystegia*. When adult they are ringed with broad crimson and black bands, separated by narrow rings of bright yellow. Each of the crimson bands bears six short black tubercles densely set with long black setæ, and the entire body is covered with long downy white hairs. If the caterpillar is touched it causes a burning sensation on the hand. It feeds rapidly and pupates about the end of January. The moth sometimes emerges three weeks later, but more often remains in its pupal state until the following summer. It always emerges during the daytime.

The fore-wing of the male moth is acuminate at the tip and strongly sinuate along the hind-margin; very dark-purple in the basal and median areas, turning to light ochreous mottled with light reddish-brown in the outer half. Hind-wing fuscous, with the basal half of the costa deep pink, and the inner- and outer-margins light or dark ochreous, mottled with brown. The female has the wings of normal shape. The whole of the fore-wing is dark blackish-purple, with two narrow black transverse bands and a small median flavous patch. The hind-wing is greyish-black, with the basal third or half of the costa deep pink. Occasionally nearly the whole of the wing has a pink flush.

CINABRA HYPERBIUS, Westw., var.

The Rhodesian variety of this Saturniid is a very handsome moth, the upper-side of the hind-wings being bright yellow instead of red, with a narrow red hind-marginal band, and a sub-marginal bright lilac, mauve or slate-blue band, moderately broad in the male, twice as wide in the female. Separated from this by a band of the yellow ground colour is a rather narrow dark grey post-median band parallel to the outer-margin. Base and inner-margin covered with pinkish hairs. A few female examples have the whole of the fore-wing tinted with bluish-grey or slate-blue.

Wing expanse. ♂ 88 (dwarf) –120 mm.; ♀ 114–128 mm.

Average size 110–125 mm.

C. hyperbius is an abundant moth at Salisbury (and is also found at Bulawayo), the larva feeding in considerable numbers on a small *Protea*, on whose succulent leaves it thrives and is very easy to rear. It is not infrequently found on *Brachystegia randii*, but more difficult to rear on this food-plant. The eggs, which are broad and depressed at one end and narrow, rather pointed, at the other, are light olive-brown and are laid in even rows, from two to seven in a row, sometimes about the end of October, more often in the first half of November, and they hatch out in about three weeks.

Larva. First instar. Bright yellow above, with a lateral row of large black confluent spots. Each segment with six small yellow tubercles covered with long black setæ. Head black.

Second instar. Dark ochreous-yellow turning to brick-red three or four days after the moult, with inter-segmental black rings. A central black longitudinal band from head to last abdominal segment and a narrow black lateral band interrupted on each segment. Head black.

Third instar. Entire body bright salmon-pink without black rings. Black dorsal, and lateral interrupted bands as in preceding instar. Tubercles bright salmon-red, black at apex, each bearing three or four stout black setæ. On vertex of head a row of six small black setigerous tubercles. Head yellowish-olive. Towards the end of this instar the colour of the body becomes grass-green.

Fourth instar. Head and body grass-green. The two posterior thoracic segments have six large orange-red tubercles each bearing a small black setigerous spine; abdominal segments with six small black setigerous spines. Stigmata purplish-red with an outer ring of white.

Fifth instar. Head and body emerald green. On vertex of head a narrow silvery-white transverse carina. Post-cephalic and anal plates bright purple-red. Two posterior thoracic and all abdominal segments armed with eight long simple (non-setigerous) black spines which become shorter as the caterpillar fills out. On each side of claspers a triangular purple-red patch. Stigmata as in fourth instar.

As with most *Saturniidæ*, the males of this moth can be obtained by sembling with unfertilised females. One evening a female emerged in one of my breeding boxes and two hours later a dozen males flew into the room in quick succession.

CINABRA PYGMÆA, Maas. & Weym.

This is a rare moth at Salisbury, and I have seen only one example captured in this neighbourhood. The colour of the wings is very different from that of the specimen figured by Distant in his "Insecta Transvaaliensia." The fore-wing is deep carmine-red turning to lilac-pink near the outer-margin, and the hind-wing is deep orange-red with a broad pink outer border. The moth is not uncommon at the Victoria Falls.

EPIPHORA VERA, Janse.

Of this very beautiful moth I have bred three examples from cocoons found at Salisbury by Mr. A. W. Redfern. A male that emerged 22nd November and a female that came out on 1st December last summer are considerably larger than the types, the former having a wing expanse of 132 mm., and the latter of 138 mm. There is a specimen of this moth in the Bulawayo Museum, captured some years ago at the cement works, nine miles from Bulawayo on the Salisbury line, and Mr. Redfern informs me that he lately saw three examples in the British Museum. He has found one adult larva, which he describes as being light green with red spines.

LUDIA sp. nov.?

♂. Head and antennæ orange-ochreous. Sternum and pronotum bright orange-red, the anterior margin of the latter mouse-grey with some white scales. Abdomen tawny-orange or pale pink, usually with a narrow light-grey band on apical portion of each segment. Eye and legs light mouse-grey.

Fore-wing. Shaped rather like that of male *delegorguei*, but outer half of costa more strongly arched, and hind-margin very deeply concave between nervules 7 and 3. Costa and apex rather densely covered with white scales; basal three-fourths of cell pale tawny-ochreous or light grey; basal area below cell tawny-orange. A broad transverse deep orange-red band (about half as wide as the dark band in *delegorguei* male) edged inwardly and outwardly by a dark linear band, the outer of which is crimson and dotted with white scales. Beyond this band the wing is light tawny-orange between nervules 7 and 3; much paler from 3 to inner-margin Hyaline mark like that of *delegorguei*, but twice as broad, the upper half deeply bisinuate outwardly and the whole narrowly bounded by dark crimson.

Hind-wing. Pink, with the inner-margin and lower half of outer-margin broadly pinkish-orange or light orange-ochreous. Two narrow sinuous dark grey transverse bands, very faint or obsolete between costa and nervule 3. Between these bands, on an orange-yellow ground is a small discal, very curiously-shaped, black mark, strongly suggestive of a black cat in a sitting posture.

Under-side. Forewing. Costa, to inner edge of hyaline mark and upper part of cell light mouse-grey sparsely covered with white scales. Lower part of cell, basal and lower median areas, bright pink. Just beyond hyaline mark a sub-quadrate orange-red patch between costa and nervule 6. Apex covered with orange, white and greyish-green scales; hind-margin broadly orange-red to nervule 3, narrowly thence to posterior angle.

Hind-wing. Orange-pink or pale tawny-orange. Costa and hind-margin narrowly light mouse-grey. Discal mark grey and rather faint.

♀. Fore-wing shaped like that of female *delegorguei*, but apex more acuminate and hind-margin more concave between nervules 7 and 5. Pattern as in female *delegorguei*. Costa, from base to inner edge of median band, and cell covered with white scales. Base deep tawny-orange. Median transverse band twice as broad as in male, outwardly deep orange-red near costa, below hyaline spot dark tawny-orange. Sub-marginal area pale orange. Hyaline spot larger and broader than in male.

Very rarely the whole wing is coloured exactly as in *delegorguei*, except for a small costal dark red patch above the hyaline spot.

Hind-wing. Shaped as in female *delegorguei*. Colour similar to that of male; the black discal mark is much broader and looks just like a cat standing, and there is a small hyaline spot on its lower inner extremity. A broad transverse discal band, either outwardly dark purple and inwardly dark pinkish-orange, or entirely dark grey, between lower edge of costal pink and inner-margin.

Under-side. Forewing. Costal and basal areas mouse-grey with long whitish hairs. Inner-margin and basal half of area 2 bright pink. A broad orange-red costal patch just beyond hyaline spot. Apex dark grey with a few white scales. Hind-margin broadly light tawny-orange, with a row of dark orange-red inter-nervular spots, that in area 2 much larger than the others. Hind-wing as in male.

Wing expanse. ♂ 52–58 mm.; ♀ 62–75 mm.

This very pretty *Ludia* may prove to be identical with the East African species described by Hampson several years ago (the description of which I have not seen), or it may be a new species. It does not seem to occur outside the Salisbury district. The larva feeds on *Uapaca kirkiana*, rarely on *Protea sp.*, and is a wonderfully variable caterpillar. I have taken no fewer than ten different varieties of this caterpillar, each of which was quite unlike any of the others. It is covered with long glandular hairs, a slight touch of which causes a very painful blister. In one form there is a very broad dorsal band extending from behind the head to the anal plate, the lateral surfaces are light greyish-olive, and each segment bears eight bright yellow strongly setigerous tubercles. A second form has the dorsal and lateral surfaces black, mottled with small yellow and white spots, and on each segment is a band of eight large contiguous crimson tubercles. A third form is pure white with the rings of tubercles bright orange-red. A fourth, pale creamy-ochreous, with ochreous-brown tubercles and marks, and in a fifth the colours are bright yellow and magenta. I have mislaid the short descriptions I made of the other vars. The moth is double-brooded, the adult larva being found in October or April. When about to pupate it spins a very hard cocoon. The early brood of moths emerges at the end of October, or, more commonly, in November, and the late summer brood in March. The discal mark on the hind-wing is wonderfully suggestive of a black cat, as is remarked by nearly everybody who sees the moth.

HOLOCERA RHODESIENSIS, Janse.

This beautiful moth is fairly common at Salisbury; the larvæ feed on *Cussonia spicata* and are gregarious.

The caterpillar is dimorphic. In the more common form the body and tubercles are black with long downy hairs and an inferior double row of salmon-red marks. In the second form the segments are ringed with black and white. Like the larva of the *Ludia* described above, this caterpillar is an awful thing to touch. The moth emerges between the beginning of December and the latter end of February.

Wing expanse. ♂ 44–58 mm.; ♀ 68–76 mm.

In addition to the *Saturniidæ* enumerated above, we have at Salisbury: *Cirina similis*, *Cirina forda*, *Gynanisa maia*, *Heniocha appolonia*, *Pseudaphelia apollinaris*, *Goodia kuntzei*, *Ludia delegorguei*, *Tagoropsis flavinata*, the curious *Decachorda pomona*, and another small species the genus of which is as yet undetermined. All of these, with the exception of the last, *G. maia* and *D. pomona*, are common in this neighbourhood.

Gonimbrasia zambesina is found at Hartley. *Argema mimosæ* occurs throughout Matabeleland and has been taken in the south-west of Mashonaland, but so far it has not been recorded near Salisbury. The fauna of Bulawayo includes, among other species, *Nudaurelia arata*, *Gonimbrasia belina*, *Heniocha terpsichore* and *H. flavida*.

Finally, in the Melsetter district the following species, all of them unknown to me, have been captured by Mr. C. F. M. Swynnerton: *Imbrasia obscura*, Butl., *Gonimbrasia* near *irisio*, F., *Tagoropsis hanningtonii*, Butl., *Gynanisa ethra*, Westw., and *Brahmæa ocelligera*, Butl.